

## Claims

1. A method of providing macro mobility management for a mobile node in an access system comprising a plurality of mobile nodes, a first and a second access node serving said mobile nodes within the first and second parts of the access system, respectively, at least one first gateway node for interfacing said first part of the access system with external networks , and a first mobility entity which is associated with said at least one first gateway node and arranged to provide macro mobility management routing services to the mobile nodes while registered to the first part of the access system, said method comprising steps of
  - establishing a session between one of said plurality of mobile nodes and a second party via said first access node (SGSN1) and said first mobility entity,
  - checking whether there is a second mobility entity which is more preferred in respect of routing than said first mobility entity and reacting to said checking by
    - A) maintaining a connection to said first mobility entity if there is no second mobility entity which is more preferred than said first one, and
    - B) opening new connection to said second mobility entity if said more preferred second mobility entity is available, and initiating macro mobility management registration.
2. The method according to claim 1, comprising rerouting the session via said second access node in response to a movement of said one of mobile nodes to said second part of the system.
3. The method according to claim 1, comprising closing the connection to said first mobility entity when said more preferred second mobility entity is available.
4. The method according to claim 1, w h e r e i n said macro mobility management is Internet Protocol-type, or IP-type mobility management, and wherein an agent advertisement message is sent from said second mobility entity to said one mobile node over said new connection, said agent advertising message enabling said one mobile node to detect a change of attachment point and to initiate mobile IP registration.
5. The method according to claim 1, comprising storing in said second access node the identity of said preferred mobility entity of said second access node,

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checking in said second access node , in response to a movement of said one mobile node from said first access node to said second access node, whether the identity of said first mobility entity and said stored identity of said preferred mobility entity match or not,

5           maintaining a connection to said first mobility entity if the identities match, and

          closing the connection to said first mobility entity and opening a new connection to said preferred mobility entity if said identities do not match.

6. The method according to claim 1 or 2 in a radio access system,  
10       wherein said steps of closing and opening of the connection comprise steps of closing and opening of a packet protocol context .

7. The method according to claim 6, comprising transferring the packet protocol contexts of a mobile station which the mobile node is associated with from the first access node to the second access node, along with information which indicates which one or ones of the packet radio protocol contexts relate to the macro mobility management,  
15

          distinguishing the macro mobility management related packet protocol context(s) from possible other packet protocol contexts on the basis of said information at the second access node,

20       performing said steps of opening and closing solely on the macro mobility management related packet protocol context(s).

8. The method according to claim 1, wherein said preferred mobility entity of said second access node is a foreign agent associated with a gateway node in said second part of the access network.

25       9. The method according to claim 1, wherein said identity includes the address of the mobility entity.

10. An access system, comprising  
          a plurality of mobile nodes,  
          a first and a second access node serving said mobile nodes within  
30       the first and second parts of the access system, respectively,

          at least one first gateway node for interfacing said first part of the access system with external networks,

          a first mobility entity which is associated with said at least one first gateway node and arranged to route a connection to any one of said mobile nodes while said mobile node is registered to the first part of the access system,  
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a mechanism which checks whether there is a second mobility entity which is more preferred in respect of routing than said first mobility entity,

a mechanism which opens a new connection to said second mobility entity if said more preferred second mobility entity is available according to said checking,

said mobile node being arranged to detect a change of attachment by means of said new connection and to initiate macro mobility management registration.

11. The system according to claim 10, comprising a rerouting mechanism by which said connection initially routed via said first access node and said first mobility entity can be routed via said second access node in response to a movement of said one of mobile nodes to said second part of the access system.

12. The system according to claim 10, comprising a mechanism which closes a connection to said first mobility entity when said more preferred second mobility entity is available according to said checking.

13. The system according to claim 10, comprising said macro mobility management being Internet Protocol-type, or IP-type, mobility management,

said second mobility entity being arranged to send an entity advertisement message to said one mobile node over said new connection,

said mobile node being arranged to detect a change of attachment by means of said entity advertising message and to initiate mobile IP registration.

14. The system according to claim 10, wherein said preferred mobility entity of said second access node is a foreign agent associated with a gateway node in said second part of the access network.

15. The system according to claim 10, wherein said second access node is arranged to make said checking.

16. The system according to claim 15, wherein the second access node is arranged to store the identity, such as address, of the preferred foreign agent for the checking purposes.

17. The system according to claim 10 or 11, characterized in that said closing and opening of the connection comprise closing a packet pro-

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protocol context in the gateway node of the first mobility entity and opening a packet protocol context in the gateway node of the preferred mobility entity .

18. The system according to claim 17, wherein said maintaining of the connection comprises updating of a packet protocol context of the mobile node (in the gateway node of the first mobility entity .

19. The system according to claim 17, wherein packet protocol contexts of a mobile station which the mobile node is associated with are associated with information which indicates which one or ones of the packet protocol contexts relate to the macro mobility management, and wherein the access node is arranged to distinguish the macro mobility management related packet protocol context(s) from possible other packet protocol contexts on the basis of said information and to said steps of opening and closing solely on the macro mobility management related packet protocol context(s).

20. The system according to claim 19, wherein said information is provided in a message transferring the packet protocol context(s) from said other access node to said access node.

21. An access node for an access system comprising a plurality of mobile nodes, access nodes serving said mobile nodes within respective parts of the access system, at least two gateway nodes for interfacing the access system with external networks (11), and at least two mobility entities which are associated with different ones of said at least two gateway nodes and arranged to provide macro mobility management routing services to the mobile nodes while registered to the access system, said access node comprising

means for checking, when a mobile node having a connection through another access node and a first mobility entity is accessing the system via said access node, whether there is another mobility entity which is more preferred in respect of routing than said first mobility entity,

means responsive to said checking means for opening a new connection to said preferred other mobility entity if said more preferred other mobility entity is available.

22. The access node according to claim 21, comprising means for closing a connection to said first mobility entity when said more preferred other mobility entity is available.

23. The access node according to claim 21, wherein said checking means comprises

means for storing the identity, such as address, of said preferred other mobility entity of said access node .

means for checking, in response to a movement of said mobile node (MS/MN) from said other access node to said access node whether the identity of said first mobility entity and said stored identity of said preferred mobility entity match or not.

24. The access node according to claim 22 , wherein said closing and opening means comprise

means for maintaining a connection to said first mobility entity if the identities match, and

means for closing the connection to said first mobility entity and opening new connection to said preferred mobility entity if said identities do not match.

25. The access node according to any one of claims 22, 23 or 24 , wherein said access system is a radio access system, and wherein said means for closing and opening of the connection comprise means for closing a packet protocol context in the gateway node of the first mobility entity and opening a packet protocol context in the gateway node of the preferred mobility entity.

26. The access node according to claim 25, wherein said means for maintaining the connection comprise means for updating a packet protocol context of the mobile node in the gateway node of the first mobility entity.

27. The access node according to claim 25, wherein packet protocol contexts of a mobile station which the mobile node is associated with are associated with information which indicates which one or ones of the packet protocol contexts relate to the macro mobility management, and wherein the access node is arranged to distinguish the macro mobility management related packet protocol context(s) from possible other packet protocol contexts based on said information and to perform said steps of opening and closing solely on the macro mobility management related packet protocol context(s).

28. The access node according to claim 27, wherein said information is provided in a message transferring the packet protocol context(s) from said other access node to said access node.

29. The access node according to any one of claims 21 to 28, wherein said macro mobility management is Internet Protocol-type, or IP-type, mobility management.

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